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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/812,326	03/20/2001	Wen-Shyong Liao	LOUIS 3.0-018	2913

7590

09/11/2002

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EXAMINER

LE, DANG D

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 09/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/812,326

Applicant(s)

LIAO, WEN-SHYONG

Examiner

Dang D Le

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7 is/are allowed.
- 6) ☒ Claim(s) 8 and 10-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 8/15/02 have been fully considered but they are not persuasive. The applicant's argument is on the ground that Ichiyama and Kuwayama et al. do not show "the storage space between the outer surface of the ceramic axial tube and the inner surface of the ceramic axial support" being "within the range of 2-25 micro meters for dispersing lubricants therefrom."

It is noted that the storage space of the present invention is the gap between a rotating component and a stationary component. As a result, the storage space is equivalent to the gap (22) of Kuwayama et al. and Kuwayama et al. clearly show the gap to be within the range of 1-30 micro meters in column 6, line 22. In addition, the gap of Ichiyama is for dispersing and receiving lubricating oil. See Figure 1 of Ichiyama.

2. Applicant's arguments with respect to claims 8 and 10-16 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichiyama in view of Kuwayama et al.

Regarding claim 8, Ichiyama shows a supporting device of a rotor (Figure 1), which comprises:

- An axial tube (18) which is a hollow tube (40) with one end fixed on the rotor (4) and is formed with at least one concave on an outer surface (in the middle);
- An axial support (20) which may rotationally support the axial tube, wherein a storage space for lubricants is defined by an inner surface of the ceramic axial support and the concave on outer surface of the ceramic axial tube (between indicating arrows 24 and 26); and
- The storage space between the outer surface of the axial tube and the inner surface of the axial support being for dispersing lubricants therefrom (Figure 1).

Ichiyama does not show the axial tube and the axial support being made of ceramic and the storage space between the outer surface of the axial tube and the inner surface of the axial support being within the range of 2-25 micrometers.

Kuwayama et al. show the axial tube (13) and the axial support (12) being made of ceramic and the gap (22) being within the range of 1-30 micrometers (column 6, lines 19-22) for the purpose of preventing dead lock.

Since Ichiyama and Kuwayama et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the axial tube and the axial support of ceramic and the gap within the range of 2-25 micrometers as taught by Kuwayama et al. for the purpose discussed above.

Regarding claim 11, it is noted that Ichiyama also shows the concave being formed in a middle circular concave part of the axial tube.

Regarding claim 13, Ichiyama shows a supporting device of a rotor (Figure 1), which comprises:

- An axial tube (18) which is a hollow tube (40) with one end fixed on the rotor (4);
- At least one axial support (20) which rotationally support the axial tube by a rotational corresponding spacing which defines a lubricating chamber for receiving lubricant; and
- Means (space above 22) for allowing the lubricant to leak onto the outer surface of the axial tube.

Ichiyama does not show the tube and the support being made of ceramic and the spacing within the range of 2-25 micrometers.

Kuwayama et al. show the tube and the support being made of ceramic and the spacing (22) within the range of 1-30 micrometers (column 6, lines 19-22) for the purpose of preventing dead lock.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the axial tube and the axial support of ceramic

and the gap within the range of 2-25 micrometers as taught by Kuwayama et al. for the purpose discussed above.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichiyama in view of Kuwayama et al. as applied to claim 8 above, and further in view of Komatsu.

Regarding claim 10, the supporting device of Ichiyama modified by Kuwayama et al. includes all of the limitations of the claimed invention except for ceramic powders of a metal oxide selected from the group consisting of aluminum oxide, zirconium oxide, silicon oxide and a mixture thereof being used and uniformly formulated with a plastic agent, an assisting agent and a dispersing agent at a predetermined ratio.

Komatsu shows ceramic powders (Abstract and column 1, lines 15-30) of a metal oxide selected from the group consisting of aluminum oxide (column 6, line 50), zirconium oxide, silicon oxide and a mixture thereof being used and uniformly formulated with a plastic agent (column 3, lines 60-67), an assisting agent and a dispersing agent at a predetermined ratio (column 1, lines 35-50) for the purpose of making bearing components.

Since Ichiyama, Kuwayama et al. and Komatsu are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make a bearing with ceramic powders of a metal oxide selected from the group consisting of aluminum oxide, zirconium oxide, silicon oxide

and a mixture thereof being used and uniformly formulated with a plastic agent, an assisting agent and a dispersing agent at a predetermined ratio as taught by Komatsu for the purpose discussed above.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichiyama in view of Kuwayama et al. as applied to claim 8 above, and further in view of Davies.

Regarding claim 12, the supporting device of Ichiyama modified by Kuwayama et al. includes all of the limitations of the claimed invention except for the lubricant being a fluoride containing lubricant with a particle diameter smaller than 1 micron.

Davies shows the lubricant being a fluoride containing lubricant with a particle diameter smaller than 1 micron (column 2, lines 1-15) for the purpose of reducing friction.

Since Ichiyama, Kuwayama et al. and Davies are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the lubricant a fluoride containing lubricant with a particle diameter smaller than 1 micron as taught by Davies for the purpose discussed above.

7. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichiyama in view of Kuwayama et al. as applied to claim 13 above, and further in view of Muller et al.



Regarding claim 14, the device of Ichiyama modified by Kuwayama et al. includes all of the limitations of the claimed inventions except for the outer surface of the ceramic axial tube being formed as a non-cylindrical surface.

Muller et al. show the outer surface of the ceramic axial tube being formed as a non-cylindrical surface (13 and 14) for the purpose of making sleeve bearings.

Since Ichiyama, Kuwayama et al. and Muller et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the outer surface of the ceramic axial tube as a non-cylindrical surface as taught by Muller et al. for the purpose discussed above.

Regarding claim 15, it is noted that Muller et al. also show the inner surface of the ceramic axial tube being formed as a non-cylindrical surface (between 13 and 14).

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichiyama in view of Kuwayama et al. as applied to claim 13 above, and further in view of Komatsu.

Regarding claim 16, the device of Ichiyama modified by Kuwayama et al. includes all of the limitations of the claimed invention except for ceramic powders of a metal oxide selected from the group consisting of aluminum oxide, zirconium oxide, silicon oxide and a mixture thereof being used and uniformly formulated with a plastic agent, an assisting agent and a dispersing agent at a predetermined ratio.



Komatsu shows ceramic powders (Abstract and column 1, lines 15-30) of a metal oxide selected from the group consisting of aluminum oxide (column 6, line 50), zirconium oxide, silicon oxide and a mixture thereof being used and uniformly formulated with a plastic agent (column 3, lines 60-67), an assisting agent and a dispersing agent at a predetermined ratio (column 1, lines 35-50) for the purpose of making bearing components.

Since Ichiyama, Kuwayama et al. and Komatsu are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make a bearing with ceramic powders of a metal oxide selected from the group consisting of aluminum oxide, zirconium oxide, silicon oxide and a mixture thereof being used and uniformly formulated with a plastic agent, an assisting agent and a dispersing agent at a predetermined ratio as taught by Komatsu for the purpose discussed above.

***Allowable Subject Matter***

9. Claims 1-7 are allowed.
10. The following is a statement of reasons for the indication of allowable subject matter: the record of prior art does not show a supporting device of a rotor, which comprises a ceramic axial tube which is a hollow tube with one end opening fixed on and closed by the rotor, and the other end opening closed by a lid, to allow a space formed within the ceramic axial tube to store lubricants.

The most relevant references are U.S. Patent Nos. 5,791,784 and 5,938,343 issued to Ichiyama and Grantz et al., respectively. However, the axial tubes of Ichiyama and Grant et al. are neither closed by the rotor nor made of ceramic.

***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Information on How to Contact USPTO***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D Le whose telephone number is (703) 305-0156. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone

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numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

DDL  
September 10, 2002

